

**SNOWBOARD BINDING**BACKGROUND OF THE INVENTION

[0001] The invention relates to a snowboard binding.

[0002] One such binding is known from EP 0 838 248 B1. This binding has a base plate, which can be mounted on the top side of a snowboard. Side plates project vertically upwards on both sides from the base plate. Adjustable toe and instep straps are attached to these side plates, as well as a heel support, which can pivot and which is generally also called a "highback." The heel support consists of two parts, namely a lower part that can pivot and an upper part screwed onto this lower part, wherein the upper part can be adjusted in position by means of elongated holes. The mentioned toe and instep straps can be adjusted in length in order to adapt the binding to the particular shoe. Also, these straps can be opened for stepping into or out of the binding.

[0003] Typically, such bindings are manufactured in only one or a few sizes, wherein it is then up to the user to adapt the binding to his shoe size by adjusting the mentioned straps. The relative position of the heel support to the edge of the snowboard is usually fixed, namely by threaded inserts (so-called inserts) in the snowboard and corresponding holes in a holding plate, which is inserted into an opening of the base plate. According to the bindings found on the market, the holding plate has either an elongated hole or a series of holes for each attachment screw, wherein the position of the binding relative to the snowboard can be adjusted and thus also the relative position between the heel support and the adjacent edge of the snowboard. However, this adjustment is tedious and is usually performed only once during the first assembly of the binding.

SUMMARY OF THE INVENTION

[0004] An object of the invention is to improve the known snowboard binding such that the binding can be adapted individually to the respective boot even after the assembly of the base plate on a snowboard and especially such that the position of the heel support is adjustable.

[0005] An aspect of the invention is to hold the heel support on both sides at intermediate elements and to mount these intermediate elements on the base plate or the side plates. The position of the intermediate elements can be adjusted in the longitudinal direction of the binding.

[0006] Preferably, the lower sides of the intermediate elements facing the base plate are toothed and the upper side of the base plate facing the intermediate elements or the side plates have a corresponding counter toothed section to create a connection with a positive fit that can nevertheless be adjusted in fine intervals. The base plate or the side plates have at least one opening for passage of screws, which extend through the intermediate elements. The mentioned opening is formed as an elongated hole.

[0007] Preferably, at least one support element is attached on the lower side of the intermediate elements facing the base plate. The support element engages in the opening and is supported on its side wall to give the connection between the support elements and base plate a higher strength, especially against tilting of the intermediate elements about the longitudinal axis of the binding.

[0008] Preferably, two screws and two support elements are provided per intermediate element, wherein the base plate or the side plates then each have two openings.

[0009] Preferably, a tensioning element is mounted on the intermediate elements, which is guided around the top region of the heel element and which fixes the heel element in the closed position of the binding.

[0010] In the following, the invention is explained in more detail with reference to an embodiment in connection with the drawing.

[0011] Other objects and features will be in part apparent and in part pointed out hereinafter.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Figure 1 is a perspective view of a snowboard binding according to the invention viewed diagonally from behind;

[0013] Figure 2 is a side view of the binding in partially cut-away representation;

[0014] Figure 3 is a top view of the base plate; and

[0015] Figure 4 is a view of the bottom side of an intermediate element.

[0016] Corresponding reference characters indicate corresponding parts throughout the drawings.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] The snowboard binding of Figure 1 has a flat base plate 1, from which on both sides side plates 2 project upwards essentially vertically. In the front foot region, there is an instep strap 3, which is attached to the side plates on both sides by means of toothed straps 4 and 5. Locking devices 6 and 7 are attached to the instep strap. The toothed straps 4 and 5 are threaded into these locking devices and can be fixed in place, wherein the length and thus also the height of the instep strap 3 is adjustable. The instep strap 3 is here formed as one piece and extends essentially from the front foot region 8 to the instep region 9 of the not shown shoe.

[0018] In the heel region, an intermediate element 11 is attached to both side plates 2. A heel support 12, which can pivot about a pivot support 13, is mounted on this intermediate element, such that the heel support 12 for opening the binding can be pivoted backwards in the direction of the arrow 14. The heel support 12 is held by a tensioning element 15 in the shown closed position, wherein the tensioning element 15 is attached to both intermediate elements 11 and surrounds the heel support 12 on its outer side. Attachment points 16 for the tensioning element 15

can be formed as a pivot support and can be offset forwards in the direction towards the front foot region 8 relative to the pivot support 13. The tensioning element 15 is held on the heel support 12 at a control lever 17, which can pivot about a pivot axis 18. If the control lever 17 is pivoted downwards in the direction towards the base plate 1, then the heel support 12 can be pivoted backwards into the open position. Conversely, the binding is closed by tilting the heel support forwards and tilting the control lever 17 upwards.

[0019] As can be seen from Figure 1, the toothed belt 5 can also be attached to the corresponding intermediate element 11 either, as shown with the reference number 5a, to the attachment point 16 for the tensioning element 15 or to a different position of the intermediate element 11, e.g., between the attachment point 16 and the pivot support 13, as made clear with the reference number 5b. The associated locking device 7, 7a, or 7b is always mounted on the instep strap 3 so that it can pivot and so that it can be aligned correctly relative to the toothed strap 5, 5a, 5b. Obviously, the front toothed strap 4 and its locking device 6 are also fixed to the side plate 2 or to the instep strap 3 so that they can pivot, such that the instep strap 3 is also pushed forwards and backwards in the longitudinal direction of the binding. In this way, the instep strap can be positioned.

[0020] The intermediate elements 11 have on their lower side a toothed section 19, which engages a counter toothed section 20 on the side plates 2. The intermediate elements 11 can be displaced in the longitudinal direction of the binding, wherein the position of the heel element 12 can be adjusted relative to the longitudinal axis of the binding. Thus, the effective length of the binding can be adapted to the respective shoe.

[0021] The two intermediate elements 11 can be adjusted independently from each other, wherein the heel support 12 can also be positioned diagonally.

[0022] In one embodiment, the heel support 12 consists of two parts, namely a lower part 22, which is attached to the intermediate elements 11 and an upper part 23, which is attached to the lower part, by means of a threaded connection 24, which permits various relative positions between the upper and lower part 23 and 22 through a series of holes 25 or an elongated hole, wherein likewise a diagonal position of the upper part 23 is possible relative to the longitudinal axis 21.

[0023] The attachment of the intermediate elements 11 to the side plates 2 can be seen in more detail in Figure 2. The side plates here each have two longitudinal holes 26 and 27, which extend to the floor 25 of the base plate 1 and which extend in the longitudinal direction of the binding. The toothed section 20 is formed all around the longitudinal holes 26 and 27.

[0024] The intermediate elements 11 have two through-holes 28 and 29, which extend through the entire height of the intermediate elements 11. Screws 30 and 31 can be inserted into these holes 28 and 29, which screws interact with threaded nuts 32 and 33, and also, if necessary, plain washers or locking washers 34 and 35, which are to be attached outwards from the floor 25 of the base plate 1. The longitudinal holes 26 and 27 have an expanded section 36, 37 outwards from the floor 25, so that the nuts 32 and 33 and the plain washers 34 and 35 can be received in these expanded sections and do not project beyond the floor 25 of the base plate 1.

[0025] For better retention of the intermediate elements 11 on the side plates 2, support elements 38 and 39, which engage flush in the longitudinal holes 26 and 27, respectively, and which are supported on their side walls, surround the screws 30 and 31. The support elements 38 and 39 can be formed as separate parts and can have a toothed section corresponding to the toothed section 19 on their side pointing towards the intermediate element 11. However, they can also be formed as one piece on the intermediate elements 11.

[0026] Figure 3 shows a top view of the base plate 1 with the side plates 2. The position and arrangement of the longitudinal holes 26 and 27, as well as the toothed section 20, can be seen clearly in this figure. In a known way, the base plate is attached to the snowboard by means of an attachment plate 40, which engages in an opening in the base plate, by means of screws, which engage in threaded holes 41. By means of this attachment plate, which is also called a "rotating plate," the rotational position of the binding, i.e., the alignment of the longitudinal axis 21 of the binding relative to the longitudinal axis of the not shown snowboard, can be adjusted.

[0027] Figure 4 shows a view of the bottom side of an intermediate element 11 with the support elements 38 and 39, as well as the holes 28 and 29.

[0028] Finally, it should be mentioned that the invention is usable not only for snowboard bindings of the illustrated type, for which the heel element 12 is pivoted backwards to open the binding. It can also be used similarly for snowboard bindings, for which the heel element can be pivoted only forwards and the binding is opened by releasing the instep and toe straps.

[0029] When introducing elements of the present invention or the preferred embodiment(s) thereof, the articles "a", "an", "the" and "said" are intended to mean that there are one or more of the elements. The terms "comprising", "including" and "having" are intended to be inclusive and mean that there may be additional elements other than the listed elements.

[0030] In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

[0031] As various changes could be made in the above products and methods without departing from the scope of the invention, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.